

REMARKS

Claims 1 and 3-15 are pending in the case. Claims 1 and 3-15 are rejected. In the present submission, claim 1 has been amended and claim 3 has been cancelled. Reconsideration is respectfully requested.

§102(b) Rejection

Claims 1, 6, 8, 9, 14 and 15 are rejected under 35 U.S.C. §102(b) as being anticipated by Ueno et al. (US 5,334,829; hereinafter “Ueno”). The Examiner contends that Ueno discloses all the limitations of the rejected claims. Applicant respectfully traverses the rejection.

As discussed in the Applicant’s response filed November 13, 2007, Ueno describes a CCD image sensor where a heating device 5 is provided but is separated from the CCD chip 1 by a substrate electrode 3 and an electrically insulating material 4. The heating device 5 is therefore NOT in direct contact with the CCD chip 1.

Claim 1 has been amended to include the limitations of claim 3 and also to include additional limitations. Claim 1, as amended, recites:

1. An integrated circuit package for an image sensor chip, the image sensor chip including a sensor area for sensing incident light and a circuitry area, the package comprising:
 - a substrate including a first surface for receiving an image sensor chip and a second surface having an array of contact terminals formed thereon; and
 - a heater element having a first terminal and a second terminal coupled to a first contact terminal and a second contact terminal, respectively, of the array of contact terminals, **the heater element being positioned on the first surface of the substrate and directly underneath the sensor area of the image sensor chip to be assembled in the package, the image sensor chip to be placed directly on the heater element,**

wherein the heater element provides heating of the sensor area of the image sensor chip when a first voltage is applied across the first contact terminal and the second contact terminal; and

wherein **the image sensor chip is attached directly to the heater element and the first surface of the substrate using an epoxy glue so that the heater element is sandwiched directly between the**

sensor area of the image sensor chip and the first surface of the substrate to **provide direct and localized heating** of the sensor area of the image sensor chip. (Emphasis added.)

Claim 1 is patentable over Ueno at least by reciting “the heater element being positioned on the first surface of the substrate and directly underneath the sensor area of the image sensor chip to be assembled in the package, the image sensor chip to be placed directly on the heater element” and “the image sensor chip is attached directly to the heater element and the first surface of the substrate using an epoxy glue so that the heater element is sandwiched directly between the sensor area of the image sensor chip and the first surface of the substrate to provide direct and localized heating of the sensor area of the image sensor chip.”

In the integrated circuit package of claim 1, the heater is disposed on the first surface of the substrate and is positioned directly below the image sensor chip without any intervening layers. Therefore, the heater provides **direct heating** to the image sensor chip.

Ueno, to the contrary, describes forming the heating device 5 **under** the substrate electrode 3 and under the electrically insulating material 4. Thus, in the structure of Ueno, the CCD chip 1 is **not attached directly** to the heating device and the heating device is **not sandwiched directly** between the CCD chip 1 and the package substrate 2. Rather, in Ueno, the heating device is separated from the CCD chip 1 by at least two intervening layers. Ueno fails to teach or suggest the limitations of claim 1 where the image sensor chip is attached directly to the heating element and the heater element is sandwiched directly between the image sensor chip and the substrate.

For at least the above reasons, claim 1 is patentable over Ueno. Claims 6, 8, 9, 14 and 15, dependent upon claim 1, are patentable over the cited reference at least for the same reasons claim 1 is patentable. Withdrawal of the §102(b) rejection is respectfully requested.

§103(a) Rejection

Claim 3 is rejected under 35 U.S.C. §103(a) as being unpatentable over Ueno in view of Anton (US 2003/0089957 A1). Claims 4 and 5 are rejected under 35 U.S.C. §103(a) as being unpatentable over Ueno. Claim 7 is rejected under 35 U.S.C. §103(a) as being unpatentable over Ueno in view of Ozimek et al. (US 5,865,935). Claim 10 is rejected under 35 U.S.C. §103(a) as being unpatentable over Ueno in view of Ito et al. (US 2003/0164365 A1). Claims 11-13 are rejected under 35 U.S.C. §103(a) as being unpatentable over Ueno in

view of Barlow et al. (US 4,420,261; hereinafter “Barlow”). Applicant respectfully traverses the rejection.

Claim 3 has been cancelled and the limitation added to claim 1. With regard to the limitation presented in claim 3, the Examiner contends that Anton teaches that the image sensor chip being attached to the heater element and the first surface of the substrate using an epoxy glue being the gelatinous material RBC Epoxy. Applicant submits that the gelatinous material 3 described by Anton is in fact NOT an adhesive material. Anton states in paragraph [0017] that the “gelatinous material is...preferably thixotropic.” The term “thixotropic” means the property of various gels of becoming fluid when disturbed. Therefore, the gelatinous material does not provide any adhesive function. Rather, the gelatinous material contains a metallic second phase to increase the thermal contact between the optical device 1 and the gelatinous material 3 so as to maintain a uniform temperature (see paragraph [0020] of Anton). It is imperative to note that Anton describes attaching heating elements 4 to the bottom side of a ceramic substrate and then providing the gelatinous material to the top side of the ceramic substrate. The optical device 1 is then placed on top of the gelatinous material. Therefore, Anton does not cure the deficiency of Ueno as Anton does not teach or suggest the image sensor chip being attached directly to the heater element and the first surface of the substrate using an epoxy glue, as recited in amended claim 1.

Claims 4-5, 7, 10 and 11-13, dependent upon claim 1, are patentable over Ueno at least for the same reasons claim 1 is patentable. The cited references do not cure the deficiency of Ueno. Claims 4-5, 7, 10 and 11-13 are therefore patentable over the cited references.

With regard to claims 11-13, the claims are patentable over Ueno and Barlow for the additional reason that Barlow does not teach or suggesting providing protection resistors for a heater element. Barlow in Figure 6 illustrates an amplifier 77 including “two 470 ohm resistors, 102 and 103, together with diodes 104 and 106 (1N914)” for protecting the output against static electric discharges or other accidental stress (see Barlow, col. 11, lines 37-40). Therefore, while Barlow describes providing protection resistors for an amplifier, Barlow does not teach or suggest that the same protection resistors can be applied to a heater element.

For the reasons stated above, withdrawal of the §103(a) rejection is respectfully requested.

CONCLUSION

After the present amendment, claims 1, 4-15 are pending in the present application. For the reasons stated above, the claims are patentable over the cited references and are in condition for allowance. If the Examiner would like to discuss any aspect of this application, the Examiner is invited to contact the undersigned at (408) 382-0480.

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Respectfully submitted,

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